



February 3, 2017

Ms. Bev McKeone, Program Manager
NSR Permitting
Division of Air Quality
West Virginia Department of Environmental Protection
601 - 57th Street
Charleston, WV 25304



Kingsford Mfg. Company
WV Operations

**Re: Permit Determination Form Application for Installation of Additional Propane Burner in the ACC Control Device at the Kingsford Manufacturing Company Beryl, WV Plant
Title V Permit No. R30-05700003-2012
Plant ID No. 057-00003**

Dear Ms. McKeone:

Kingsford Manufacturing Company (KMC) owns and operates a charcoal manufacturing facility located in Beryl, Mineral County, West Virginia that is subject to the above referenced Title V Operating Permit. KMC is submitting the attached Permit Determination Form to add a second propane-fired burner to the After Combustion Chamber (ACC) which is used as an air pollution control device (C-08) to control emissions from the plant's rotary wood dryer and retort furnace that comprise Emission Unit ID 003. The second burner is needed to ensure adequate heat input to the ACC during startup or upset conditions when insufficient heat is available from the wood pyrolysis process.

After the Beryl plant fuel supply had to be switched from natural gas to propane in late 2015, the existing 40 MMBtu/hr ACC burner has not been capable of achieving its rated heat input on high fire. To improve the ACC auxiliary burner performance, KMC proposes to install a second burner rated at 40 MMBtu/hr. KMC will also install a new, larger propane vaporizer and will utilize two separate fuel trains for the two burners. The existing 12,000-gallon propane tank will continue to be used to supply fuel to both burners. Both ACC burners will fire propane only and will each have a rated heat input of 40 MMBtu/hr. KMC only anticipates operating both burners at high fire during system startup periods (both "hot startups" following a process interruption and "cold startups" following an extended plant shutdown) or in the event of a process interruption (e.g., very wet feed to the wood dryer). Based on the Beryl plant operational history, KMC anticipates that the burner will operate between 120 – 160 hours per year.

No changes to permitted emission rates are necessary and the installation of the additional ACC burner will not violate any existing permit term or condition. KMC is providing air emissions calculations as Attachment E that demonstrate that maximum hourly and annual emission rates associated with the new burner are below the "modification" thresholds of 6 lb/hr and 10 tpy in the 45 CSR R13 construction permit rule. A maximum annual operating schedule of 200 hours/year was assumed for the new burner.



If you have any questions or require any additional information, please feel free to contact Eric Copenhaver, Plant Engineering Manager, at (304) 478-5559.

Very truly yours,

KINGSFORD MANUFACTURING COMPANY



Carey Preston
Plant Manager

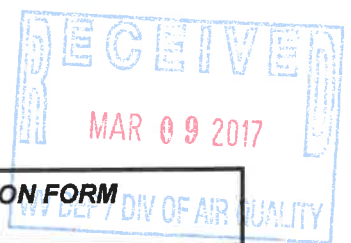
Cc: Eric Copenhaver – KMC Plant Engineering Manager
Josh Nash – KMC Beryl Site Manager
Gavin Biebuyck – Liberty Environmental, Inc.



WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF AIR QUALITY
601 57th Street, SE
Charleston, WV 25304
Phone: (304) 926-0475
www.dep.wv.gov/daq

**PERMIT DETERMINATION FORM
(PDF)**

FOR AGENCY USE ONLY: PLANT I.D. # _____
PDF # _____ PERMIT WRITER: _____



1. NAME OF APPLICANT (AS REGISTERED WITH THE WV SECRETARY OF STATE'S OFFICE):

Kingsford Manufacturing Company

2. NAME OF FACILITY (IF DIFFERENT FROM ABOVE):

Beryl, WV Facility

3. NORTH AMERICAN INDUSTRY
CLASSIFICATION SYSTEM (NAICS)
CODE:

325194

4A. MAILING ADDRESS: P.O. Box 188 Westernport,
MD 21562

4B. PHYSICAL ADDRESS: Route 46, Beryl, WV

5A. DIRECTIONS TO FACILITY (PLEASE PROVIDE **MAP AS ATTACHMENT A**): The facility is located adjacent to Route 46 near the WV-MD border, slightly west of the town of Luke, MD.

5B. NEAREST ROAD:

Route 46

5C. NEAREST CITY OR TOWN:

Beryl

5D. COUNTY:

Mineral

5E. UTM NORTHING (KM):

4,371.0

5F. UTM EASTING (KM):

666.0

5G. UTM ZONE:

17

6A. INDIVIDUAL TO CONTACT IF MORE INFORMATION IS REQUIRED:

Eric Copenhaver

6B. TITLE:

Plant Engineering Manager

6C. TELEPHONE:

304-478-5599

6D. FAX:

304-478-2129

6E. E-MAIL:

Eric.copenhaver@clorox.com

7A. DAQ PLANT I.D. NO. (FOR AN EXISTING FACILITY ONLY):

057 - 00003

7B. PLEASE LIST ALL CURRENT 45CSR13, 45CSR14, 45CSR19
AND/OR TITLE V (45CSR30) PERMIT NUMBERS ASSOCIATED
WITH THIS PROCESS (FOR AN EXISTING FACILITY ONLY):

R30-05700003-2012

7C. IS THIS PDF BEING SUBMITTED AS THE RESULT OF AN ENFORCEMENT ACTION? IF YES, PLEASE LIST:

No

8A. TYPE OF EMISSION SOURCE (CHECK ONE):

☐ NEW SOURCE

☒ ADMINISTRATIVE UPDATE

☒ MODIFICATION

☒ OTHER (PLEASE EXPLAIN IN 11B)

8B. IF ADMINISTRATIVE UPDATE, DOES DAQ HAVE THE
APPLICANT'S CONSENT TO UPDATE THE EXISTING
PERMIT WITH THE INFORMATION CONTAINED HEREIN?

☒ YES

☐ NO

9. IS DEMOLITION OR PHYSICAL RENOVATION AT AN EXISTING FACILITY INVOLVED?

☐ YES

☒ NO

10A. DATE OF ANTICIPATED INSTALLATION OR CHANGE:

10/1/2017

10B. DATE OF ANTICIPATED START-UP:

10/2/2017

11A. PLEASE PROVIDE A **DETAILED PROCESS FLOW DIAGRAM** SHOWING EACH PROPOSED OR MODIFIED PROCESS EMISSION POINT AS **ATTACHMENT B**.

11B. PLEASE PROVIDE A **DETAILED PROCESS DESCRIPTION** AS **ATTACHMENT C**. Installing a second 40-MMBtu/hr propane burner in the ACC control device (C-07) to provide additional heat during system (EU-003) startups or process upsets (not to exceed 200 hours/year). Will also install new propane vaporizer and separate fuel train for new burner.

12. PLEASE PROVIDE **MATERIAL SAFETY DATA SHEETS (MSDS)** FOR ALL MATERIALS PROCESSED, USED OR PRODUCED AS **ATTACHMENT D**. FOR CHEMICAL PROCESSES, PLEASE PROVIDE A MSDS FOR EACH COMPOUND EMITTED TO AIR.

13A. REGULATED AIR POLLUTANT EMISSIONS:

⇒ **FOR A NEW FACILITY**, PLEASE PROVIDE PLANT WIDE EMISSIONS BASED ON THE POTENTIAL TO EMIT (PTE) FOR THE FOLLOWING AIR POLLUTANTS INCLUDING ALL PROCESSES.

⇒ **FOR AN EXISTING FACILITY**, PLEASE PROVIDE THE PROPOSED CHANGE IN EMISSIONS BASED ON THE PTE OF ALL PROCESS CHANGES FOR THE FOLLOWING AIR POLLUTANTS.

PTE FOR A GIVEN POLLUTANT IS TYPICALLY BEFORE AIR POLLUTION CONTROL DEVICES AND IS COLLECTED BASED ON THE MAXIMUM DESIGN CAPACITY OF PROCESS EQUIPMENT.

POLLUTANT	HOURLY PTE (LB/HR)	YEARLY PTE (TON/YR) (HOURLY PTE MULTIPLIED BY 8760 HR/YR) DIVIDED BY 2000 LB/TON
PM	0.31	0.031
PM ₁₀	0.31	0.031
VOCs	0.35	0.035
CO	1.5	0.15
NO _x	4.45	0.45
SO ₂	0.024	0.0024
Pb	NA	NA
HAPs (AGGREGATE AMOUNT)	NA	NA
TAPs (INDIVIDUALLY)*	NA	NA
OTHER (INDIVIDUALLY)*	NA	NA

* ATTACH ADDITIONAL PAGES AS NEEDED

13B. PLEASE PROVIDE ALL SUPPORTING CALCULATIONS AS ATTACHMENT E.

CALCULATE AN HOURLY AND YEARLY PTE OF EACH PROCESS EMISSION POINT (SHOWN IN YOUR DETAILED PROCESS FLOW DIAGRAM) FOR ALL AIR POLLUTANTS LISTED ABOVE INCLUDING INDIVIDUAL HAP'S (LISTED IN SECTION 112[b] OF THE 1990 CAAA), TAP'S (LISTED IN 45CSR27), AND OTHER AIR POLLUTANTS (E.G. POLLUTANTS LISTED IN TABLE 45-13A OF 45CSR13, MINERAL ACIDS PER 45CSR7, ETC.).

14. CERTIFICATION OF DATA

I, CAREY PRESTON (TYPE NAME) ATTEST THAT ALL THE REPRESENTATIONS CONTAINED IN THIS APPLICATION, OR APPENDED HERETO, ARE TRUE, ACCURATE, AND COMPLETE TO THE BEST OF MY KNOWLEDGE BASED ON INFORMATION AND BELIEF AFTER REASONABLE INQUIRY, AND THAT I AM A **RESPONSIBLE OFFICIAL**** (PRESIDENT, VICE PRESIDENT, SECRETARY OR TREASURER, GENERAL PARTNER OR SOLE PROPRIETOR) OF THE APPLICANT.

SIGNATURE OF RESPONSIBLE OFFICIAL: Carey Preston

TITLE: PLANT MANAGER

DATE: 3 / 7 / 2017

** THE DEFINITION OF THE PHRASE 'RESPONSIBLE OFFICIAL' CAN BE FOUND AT 45CSR13, SECTION 2.23.

NOTE: PLEASE CHECK ENCLOSED ATTACHMENTS:

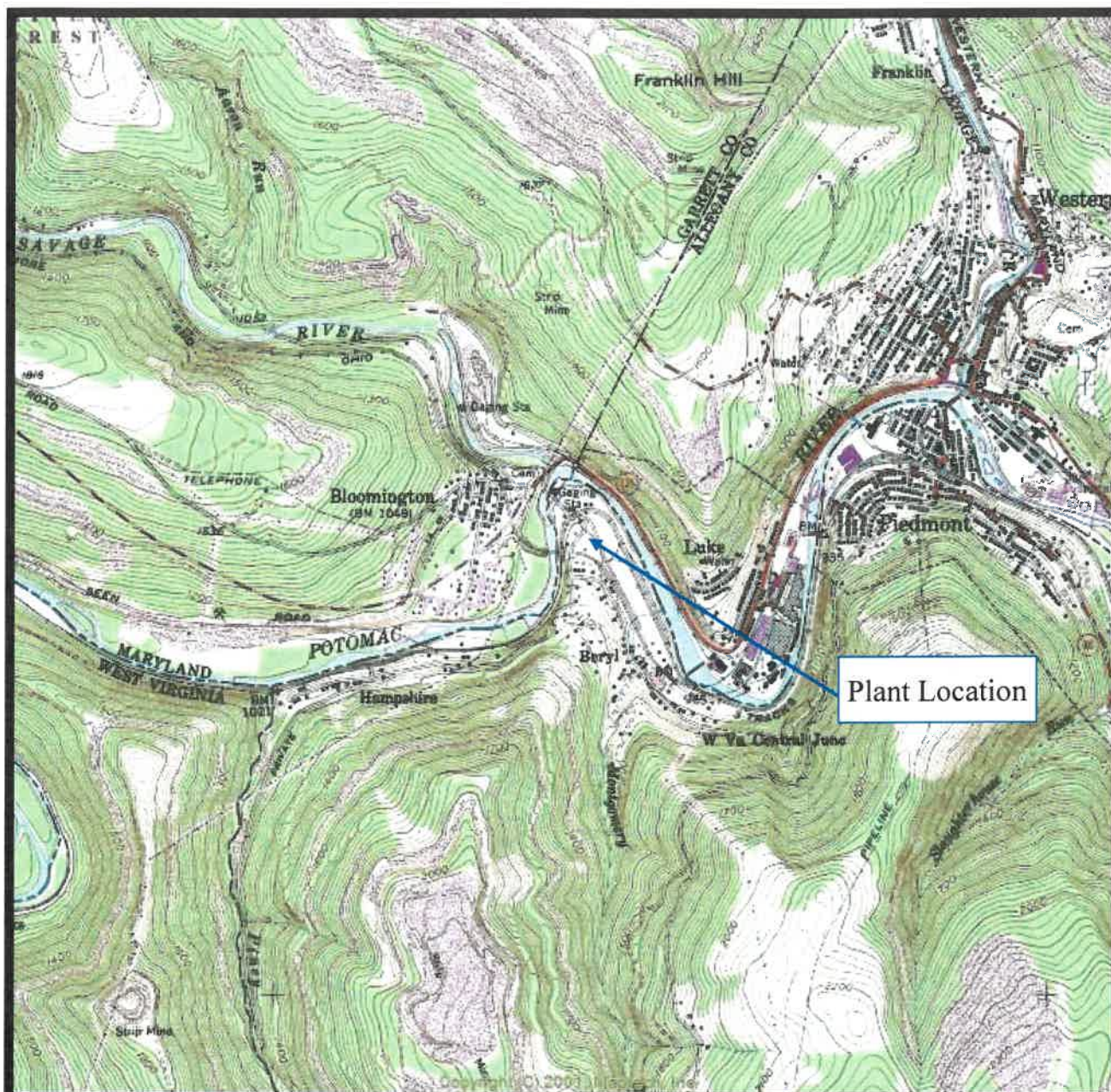
☒ ATTACHMENT A ☒ ATTACHMENT B ☒ ATTACHMENT C ☒ ATTACHMENT D ☒ ATTACHMENT E

RECORDS ON ALL CHANGES ARE REQUIRED TO BE KEPT AND MAINTAINED ON-SITE FOR TWO (2) YEARS.

THE PERMIT DETERMINATION FORM WITH THE INSTRUCTIONS CAN BE FOUND ON DAQ'S PERMITTING SECTION WEB SITE:

www.dep.wv.gov/daq

ATTACHMENT A – MAP



50 N. Fifth Street, 5th Floor
Reading, PA 19601
Phone: 610-375-9301
Fax: 610-375-9302



ATTACHMENT A: SITE LOCATION MAP

BERYL PLANT

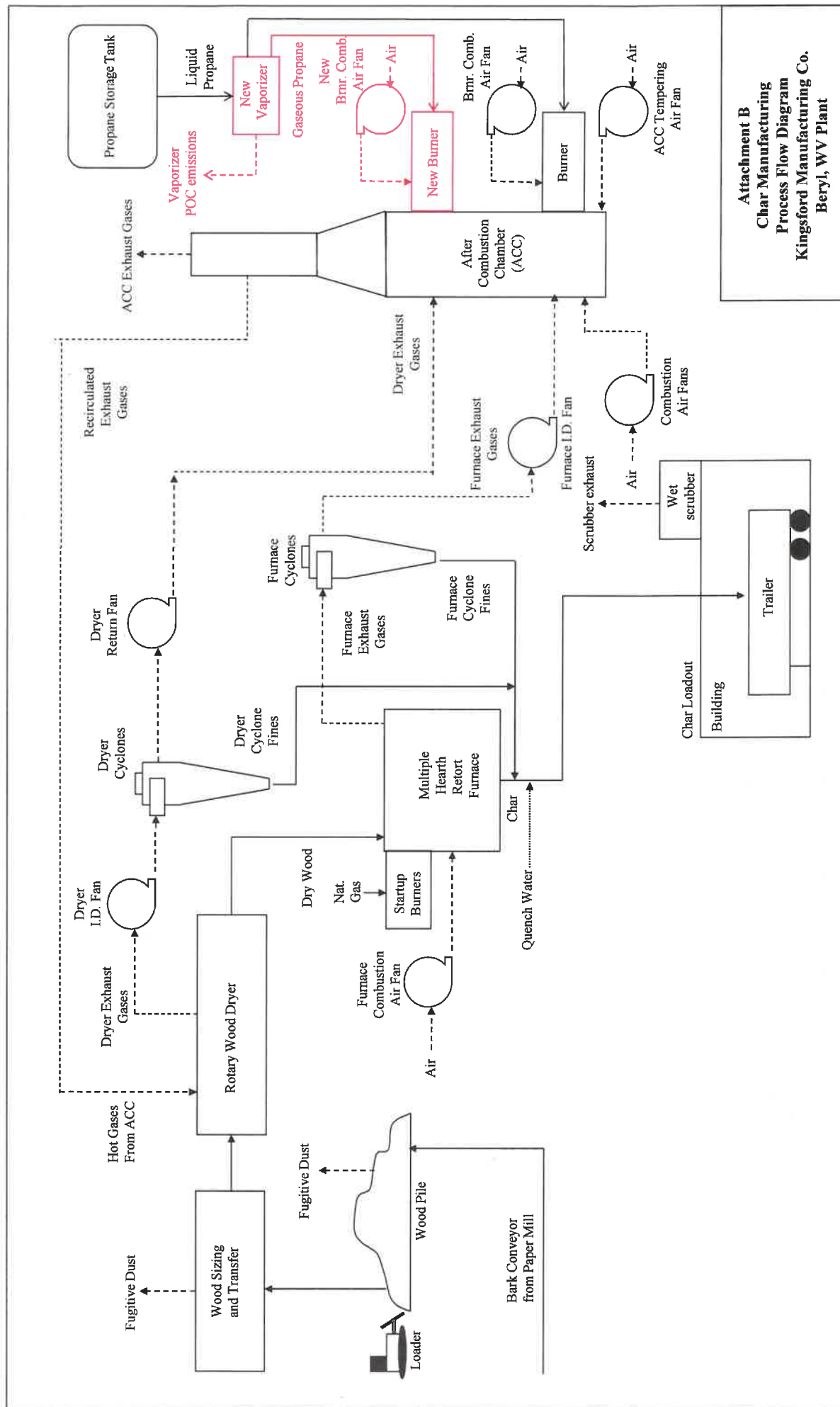
KINGSFORD MANUFACTURING COMPANY

USGS MAP QUADRANGLE: WESTERNPORT, MD

SCALE : 1" = 2000 FEET



ATTACHMENT B – PROCESS FLOW DIAGRAM



ATTACHMENT C – PROCESS DESCRIPTION

PROCESS DESCRIPTION

Kingsford Mfg. Co. (KMC) operates a wood char manufacturing plant in Beryl, Mineral County, West Virginia. Prior to late 2015, the plant used natural gas to provide heat to the wood dryer, retort furnace and afterburner (ACC) systems (collectively comprising Emission Unit 003), primarily during start up conditions. During normal operations, sufficient heat is provided from the pyrolysis of the dry wood in the furnace to support combustion in the ACC. A single burner rated at 40 MMBtu/hr heat input is located in the ACC and six (6) smaller 4.0 MMBtu/hr burners are located in the retort furnace. In October 2015, KMC was notified that natural gas supply to the Beryl plant would be restricted immediately. This restriction allowed the plant to operate during normal operating conditions but did not provide sufficient gas for system startups where it is necessary to operate the ACC burner at high fire conditions.

To address the restriction on natural gas supply, KMC installed a 12,000-gallon propane tank, vaporizer, and associated propane fuel train to provide propane to the ACC burner. The existing ACC burner is a North American low-NO_x burner (Model 4796-18). The burner was capable of firing either natural gas or propane. Natural gas remained the fuel source for the six smaller retort furnace burners. The fuel switch from natural gas to propane for the ACC burner was identified in the Title V permit through a permit amendment in late 2015.

After the Beryl plant fuel switch from natural gas to propane, the existing 40 MMBtu/hr ACC burner has not been capable of achieving its rated heat input on high fire. To improve the ACC auxiliary burner performance, KMC now proposes to install a second propane-fired burner rated at 40 MMBtu/hr. The new burner will be provided by Fives North American and is the same type “Magna-Flame” burner as the existing model. The new burner will be a Model 4796-18-X13579 and is equipped with a low-NO_x staged air mixing system. Specifications for the burner are provided in Attachment D.

To provide sufficient propane gas pressure to the two ACC burners, KMC will also install a new, larger propane vaporizer and will utilize two separate fuel trains for the two burners. The new vaporizer vendor has not yet been selected but KMC expects that the vaporizer will include a propane-fire burner rated at approximately 2 MMBtu/hr to heat a glycol bath to gasify the liquid propane. The existing 12,000-gallon propane tank will continue to be used to supply fuel to both burners. Both ACC burners will fire propane only and will each have a rated heat input of 40 MMBtu/hr (80 MMBtu/hr in total). KMC only anticipates operating both burners at high fire during system startup periods (both “hot startups” following a process

interruption and “cold startups” following an extended plant shutdown) or in the event of a process interruption (e.g., very wet feed to the wood dryer). Based on the Beryl plant operational history, KMC anticipates that the burner will operate between 120 – 160 hours per year. To conservatively estimate maximum annual emissions from the burners, a total of 200 hours per year is assumed.

As shown in Attachment E, the emissions associated with propane firing in both ACC burners are considerably lower than the permitted emissions for Emission Point S-02 (ACC) in Condition 6.1.1 of the Beryl facility Title V operating permit. Attachment E also demonstrates that maximum hourly and annual emissions from the new ACC burner are below the R13 permitting thresholds of 6 lb/hr and 10 tpy.

ATTACHMENT D – VENDOR INFORMATION AND PROPANE SDS

EMISSION OR PERFORMANCE ESTIMATES

In the course of this inquiry, Kingsford has also requested estimated performance values for NOx and CO. Our estimated NOx performance for the Afterburner Combustion Chamber burner is 4.45 lb/h. The estimated CO performance for Afterburner Combustion Chamber burner is 1.5 lb/h. These values are representative of performance obtained in prior Afterburner Combustion Chamber applications under similar firing conditions.

Caution: Emission estimates must not be used for permitting purposes.

Burner Models	4796-18-X13579
Application	Afterburner Combustion Chamber
Burner Capacity	40 MMBtu/h
Emissions Turndown	10 MMBtu/h
Process Temperature	2000 °F
Control Configuration	Fully Metered/Flow Balanced
Excess Air	10% - 15%
Process Oxygen Concentration	2.7 to 6%
Geometry	Horizontally Fired - two burners over/under
Special Tile	Not considered
Air Temperature	60 - 110 °F
Fuel Specification	60/40 LPG-Air Mixture
Special Conditions	N/A

Notes to the salesperson:

- 1)WE DO NOT OFFER GUARANTEES IN BUDGET PROPOSALS
- 2)If you want to briefly describe how they will be measured and under what conditions, that is acceptable but you do not have to go to the detail of a firm quote.
- 3)Do not include any Conditions and Limits in conjunction with the emissions estimate.

Fives North American Combustion, Inc.

4455 East 71st Street - Cleveland, OH 44105 USA

Phone: 216.271.6000 - Fax: 216.641.7852

www.fivesgroup.com

EMISSION OR PERFORMANCE ESTIMATES

In the course of this inquiry, Kingsford has also requested estimated performance values for NOx and CO. Our estimated NOx performance for the Afterburner Combustion Chamber burner is 9.9 lb/h. The estimated CO performance for Afterburner Combustion Chamber burner is 3.0 lb/h. These values are representative of performance obtained in prior Afterburner Combustion Chamber applications under similar firing conditions.

Caution: Emission estimates must not be used for permitting purposes.

Burner Models	One existing standard 4796-18 and one special new 4796-18-X13579
Application	Afterburner Combustion Chamber
Burner Capacity	80 MMBtu/h
Emissions Turndown	20 MMBtu/h
Process Temperature	2000 °F
Control Configuration	Fully Metered/Flow Balanced
Excess Air	10% - 15%
Process Oxygen Concentration	2.7 to 6%
Geometry	Horizontally Fired - two burners over/under
Special Tile	Not considered
Air Temperature	60 - 110 °F
Fuel Specification	60/40 LPG-Air Mixture
Special Conditions	N/A

Notes to the salesperson:

- 1)WE DO NOT OFFER GUARANTEES IN BUDGET PROPOSALS
- 2)If you want to briefly describe how they will be measured and under what conditions, that is acceptable but you do not have to go to the detail of a firm quote.
- 3)Do not include any Conditions and Limits in conjunction with the emissions estimate.

SAFETY DATA SHEET

EFFECTIVE May 2013

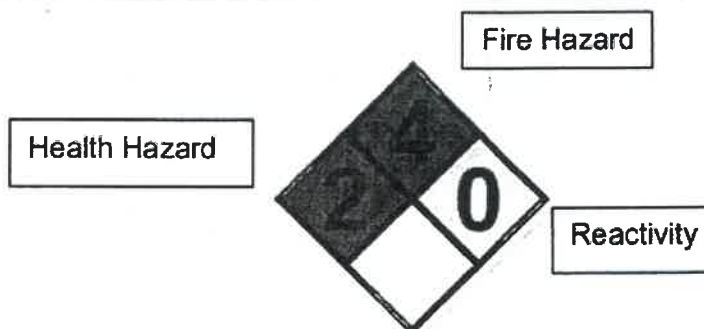
Llame 1-800-776-7263 para la información de la seguridad en el español

Suburban Propane®

SECTION 1 – PRODUCT & COMPANY IDENTIFICATION

Product Name:	Commercial Odorized Propane
Chemical Name:	Propane (C ₃ H ₈)
Chemical Family:	Petroleum Hydrocarbon
Common Names:	Liquefied Petroleum Gas, LP-Gas, LPG, Bottle Gas
Intended Use:	Propane is a liquid fuel
Distributor:	Suburban Propane, L.P. PO Box 206 Whippany, NJ 07981
Emergency Response:	CHEMTREC (800) 424-9300
Additional Safety Information:	Safety Engineering & Environmental (315) 385-4442
Customer Service (24-Hr Phone):	1-800-PROPANE or 1-800-776-7263

SECTION 2 – CHEMICAL HAZARD CLASSIFICATION & WARNING INFORMATION



NFPA CLASSES:

- 4 - Severe
- 3 - Serious
- 2 - Moderate
- 1 - Slight
- 0 - Minimal

*Ref. NFPA 704

WHAT IS PROPANE?

Propane (also called LPG-Liquefied Petroleum Gas or LP-Gas) is a liquid fuel stored under pressure. In most systems, propane is vaporized to a gas before it leaves the tank. Propane is highly flammable when mixed with air (oxygen) and can be ignited by many sources, including open flames, smoking materials, electrical sparks, and static electricity. Severe "freeze burn" or frostbite can result if propane liquid comes in contact with your skin.

PROPANE IS A SIMPLE ASPHYXIANT.

PROPANE IS FLAMMABLE.

Flammable Gas under pressure – Keep away from sources of ignition such as heat, sparks or flame.
Vapor is heavier than air and may collect in low-lying areas.

SECTION 3 – COMPOSITION/INGREDIENT INFORMATION

COMPONENTS	CAS NO.	
PROPANE	74-98-6	*
PROPYLENE	115-07-1	*
BUTANES	106-97-8	2.5%
SULPHUR	7704-34-9	185 ppm with no discoloration of Lead Acetate paper**
RESIDUAL MATTER		0.05 ml after boil off of 100 ml liquid sample **
ODORANT(S)	Various	Odor concentration detectable in air of not less than one-fifth of the lower limit of flammability per NFPA 58.
CORROSIVES		Not to exceed #1 grade copper strip test**

* Combined constituents comprise a minimum 97.45 % of the total weight under Gas Processors Association (GPA) Standard 2140-97.

** Based on American Society of Testing and Materials (ASTM) Standard D1835-91.

SECTION 4 – FIRST AID MEASURES

Eye: Although propane vapor is generally non-irritating, pressurized gas may inflict mechanical injury to the eye. Direct contact with liquid propane can cause freeze burns and resultant swelling of the eye. In case of contact with eyes, remove contact lenses if present and easy to do so, immediately flush with clean, low-pressure water, for a minimum of (15) minutes.

Skin: Contact with liquid propane can cause freeze burns similar to frostbite. Remove saturated clothing, shoes and jewelry immediately. Do not remove clothing that adheres due to freezing. Affected body parts should be gently flushed with or immersed in lukewarm water for 15 minutes. Seek medical attention.

Ingestion: Deemed unlikely.

Inhalation: Simple asphyxiant. Extreme over exposure may cause dizziness, headache, disorientation, excitability, fatigue, coughing, vomiting, anesthesia, unconsciousness and death. Move victim away from source and into fresh air. Seek medical attention - call 911 or Emergency Medical Services. If breathing difficulties develop, qualified personnel may administer oxygen. If breathing or heartbeat cease, artificial respiration or cardiopulmonary resuscitation should be started immediately.

SECTION 5 – FIRE FIGHTING MEASURES

PROPANE IS EXTREMELY FLAMMABLE. Propane will be easily ignited by heat, sparks, or flame. Propane will form explosive mixtures with air. Propane will form explosive mixtures with air. Vapors from liquefied gas are heavier than air and will spread at low levels (along the ground). Vapors may travel to source of ignition and flash back. Containers may explode when heated. Ruptured cylinders may propel/rocket.

Clear and evacuate the area - only properly trained and protected emergency response personnel shall be permitted in the area. Do not extinguish a leaking gas fire unless the leak can be stopped.

Extinguishing Media: Class B fire-extinguishing media such as HALON, CO2, or dry chemical can be used. Water spray or fog is appropriate for surrounding areas. Do not extinguish flame until source of gas is shut off. Only those with specialized training should attempt firefighting. For further information, refer to NPGA "Propane Emergencies" Text #7220.

For fires involving tanks:

- Fight fire from maximum distance or use unattended hose
- Cool containers with flooding quantities until well after fire is out
- Do not direct water source at source of leak or safety devices; icing may occur
- Withdraw immediately in case of rising sound from venting safety devices or tank discoloration
- ALWAYS stay away from tanks engulfed in fire
- For massive fire, use unattended hose holders or monitor nozzles; if this is possible withdraw from area and allow fire to burn

SECTION 6 – ACCIDENTAL RELEASE MEASURES

In the event of an accidental release or spill out of doors, these actions should be taken: Evacuate immediate area. Eliminate all possible sources of ignition including heat, sparks and open flame. Provide maximum ventilation and shut off source(s) of leak if possible to do so safely. If cylinder or container is leaking, contact the local fire department or the nearest Suburban Propane supplier. Never enter a vapor (white) cloud.

In the event of an accidental release of propane:

- Eliminate all sources of ignition (no smoking, flares, sparks or flames in immediate area)
- Ground all equipment used for handling product
- Do not touch or walk through the spilled material
- Stop leak source if this can be done without risk
- If possible, position leaking containers so that gas escapes rather than liquid
- Use water spray to reduce vapors or divert vapor cloud and avoid allowing water runoff to contact spilled material
- Do not direct water at spill or source of leak
- Prevent spreading of vapors through sewers, ventilation systems and confined areas
- Isolate area until gas has dispersed

SECTION 7 – HANDLING & STORAGE

Propane systems must be tested and proven leak free prior to use. Refer to National Fire Protection Association (NFPA) 54 National Fuel Gas Code for further instructions.

Keep away from all sources of ignition, including heat, sparks and open flames. Never check for leaks with a lit match or flame. Use an approved leak detector solution or electronic leak detector.

All piping and equipment used for the handling, storage and use of propane must be specifically designed for that purpose. Refer to NFPA 54 National Fuel Gas Code and NFPA 58 Liquefied Petroleum Gas Code.

OSHA 29 CFR 1910.110, DOT 49 CFR 172.700 and NFPA 58 all require that persons handling LP gases be specially trained in proper handling and operating procedures, which must be documented by the employer. Only qualified persons should transport, operate, service and/or install propane systems and containers.

Propane vapor is heavier than air and can collect in low-lying areas, especially in the absence of wind or ventilation. Propane is a simple asphyxiant.

Liquid propane can cause freeze burns, and appropriate personal protective equipment should be used whenever handling this product.

Propane cylinders should always be stored in an approved location with relief valves in direct communication with the vapor space, and with service valves closed and plugged when not in use. Refer to NFPA 58 for details of specific storage requirements.

DO NOT STORE PROPANE CYLINDERS OR CONTAINERS INSIDE BUILDINGS. Make sure regulator remains protected so operation will not be affected by the elements (rain, sleet, snow, ice, mud, debris). Regulator vent should be pointed down and be checked regularly. Customer to make sure building openings are not created and sources of ignition are not installed within the area of propane tanks, regulators, meters or propane equipment.

Empty propane containers retain residue and should be treated as if full. Never drop or damage containers. Damaged or corroded and leaking containers should not be utilized. Contact your local Suburban Propane supplier immediately to report any problems. If container service valve fails to operate properly, discontinue use. Never insert any object into the pressure relief valve. Return unused propane to supplier for proper disposal.

SECTION 8 – EXPOSURE CONTROLS/PERSONAL PROTECTIVE EQUIPMENT

COMPONENT	THRESHOLD LIMIT VALUE (TLV)	PERMISSABLE EXPOSURE LIMIT (PEL)
PROPANE	NE	1000 ppm
PROPYLENE	NE	NE
BUTANES	NE	800 ppm

Engineering Controls: Provide ventilation in enclosed areas where accumulation of vapors may provide a flammable mixture. Where flammable mixtures may be present, specially designed electrical systems must be used in accordance with NFPA 70 National Electric Code.

Respiratory Protection: For general use no protection is required. Under emergency conditions, concentrations may be high enough to warrant supplied-air or self-contained breathing apparatus. Under these conditions, a flammable atmosphere is likely and precautions should be taken to avoid ignition.

Eye Protection: Approved safety glasses, goggles, or face shields should be used whenever filling and handling propane containers.

Protective Clothing: To avoid skin contact with liquid propane, approved gloves that are impervious to propane should be worn along with clothing that will provide protection from liquid propane for the expected duration- of exposure.

Other Protective Equipment: Safety shoes are recommended when handling cylinders.

SECTION 9 – CHEMICAL & PHYSICAL PROPERTIES

BOILING POINT: - 44° F	FLASH POINT: -156° F	BULK DENSITY: 4.20 lbs. /gal.
SPECIFIC GRAVITY:	LIQUID: 0.504	VAPOR: 1.50
GAS VOLUME @ ATM. PRESSURE & 60° F (Cu. Ft. gas/gal. Liquid): 36.38		
VAPOR PRESSURE: 208 psig @ 100° F (ASTM) SPECIFIC HEAT of LIQUID: .630 BTU/LB. & 60° F		
FLAMMABILITY LIMITS (% BY VOLUME IN AIR): L.E.L.: 2.1 U.E.L.: 9.5		
EXPANSION RATIO OF LIQUID TO GAS @ 14.7psia : 1 to 270		
LIQUID BOIL-OFF TO PROPANE VAPOR ABOVE - 44 F°: 100%		

Propane is colorless and odorless.

Propane is very stable.

Polymerization will not occur.

An added odorant gives propane a strong unpleasant smell. Information regarding the effectiveness or intensity of odorants is set forth below.

Propane is Odorized: Propane smells like rotten eggs, a skunk's spray, or a dead animal. Some people may have difficulty smelling propane due to their age (older people have a less sensitive sense of smell); a medical condition; or the effects of medication, alcohol, tobacco, or drugs. Consider purchasing a propane gas detector as an additional measure of security.

Odor Fade: Odor fade is an unintended reduction in the concentration of the odor of propane, making it more difficult to smell. Although rare, several situations can cause odor fade:

- The presence of air, water, or rust in a propane tank or cylinder
- The passage of leaking propane through soil
- The exposure to building materials, masonry or fabrics

ATTACHMENT E – EMISSIONS CALCULATIONS

EMISSIONS CALCULATIONS

Table E-1 provides emissions calculations for propane combustion emissions from the new ACC burner during system startups. Emissions are estimated based on the burner firing at rated capacity (40 MMBtu/hr) using vendor supplied and EPA AP-42 emissions factors for fuel combustion. The AP-42 Section 1.5 (7/08) LPG combustion factors are used to calculate emissions from propane firing for all pollutants except NO_x and CO. The burner vendor, Fives North American, has provided emissions estimates for NO_x and CO emissions from the new burner – Model # 4796-18-X13579 – and the vendor data is provided in Attachment D. The vendor estimates NO_x emissions from each burner at 4.45 lb/hr (9.9 lb/hr total) and CO emissions from each burner at 1.5 lb/hr (3.0 lb/hr total). Note that these burner emissions rates are significantly less than the permit limits for the ACC stack of 65 lb/hr NO_x and 10.3 lb/hr CO (Condition 6.1.1 of Title V Permit R30-0570003-2012).

Annual emission rates associated with propane combustion in the ACC burners is calculated using the estimated maximum annual number of startups and process upsets and is conservatively assumed to be equivalent to operating the ACC burners at high fire for 200 hours/year. During normal system operations no auxiliary fuel is fired in the ACC as the furnace off-gases provide sufficient Btu content to maintain ACC temperatures above the permit limit of 1,400F.

Table E-1 shows that maximum emissions from the new burner are below the R13 permit modification thresholds of 6 lb/hr and 10 tons/year. KMC is not requesting any revisions to the permitted emissions limits for the ACC stack identified in Condition 6.1.1 of the Title V Permit.

TABLE E-1
ACC BURNER COMBUSTION EMISSIONS
KINGSFORD MANUFACTURING CO. - BERYL, WEST VIRGINIA

Source	Rated Capacity (MMBtu/hr)	Propane Btu Content (Btu/gal)	Propane Throughput		Pollutant	Propane Emission Factors ^b (lb/10 ³ gal)	Hours of Operation ^c (hours/yr)	Emission Rate	
			(10 ³ gal/hr)	(10 ³ gal/yr)				(lb/hr)	(ton/yr)
New 40 MMBtu/hr Propane-Fired ACC Burner	40	91,500	0.44	87.43	NO _x	NA	200	4.45	0.445
	40	91,500	0.44	87.43	CO	NA	200	1.50	0.150
	40	91,500	0.44	87.43	VOC	0.8	200	0.350	0.035
	40	91,500	0.44	87.43	SO ₂	0.054	200	0.024	0.002
	40	91,500	0.44	87.43	PM ₁₀ /PM _{2.5}	0.7	200	0.306	0.031
Source	Rated Capacity (MMBtu/hr)	Propane Btu Content (Btu/gal)	Propane Throughput		Pollutant	Propane Emission Factors ^b (lb/10 ³ gal)	Hours of Operation ^c (hours/yr)	Emission Rate	
			(10 ³ gal/hr)	(10 ³ gal/yr)				(lb/hr)	(ton/yr)
Both (80 MMBtu/hr total) Propane-Fired ACC Burners	80	91,500	0.87	174.86	NO _x	NA	200	9.9	0.990
	80	91,500	0.87	174.86	CO	NA	200	3.0	0.300
	80	91,500	0.87	174.86	VOC	0.8	200	0.699	0.070
	80	91,500	0.87	174.86	SO ₂	0.054	200	0.047	0.005
	80	91,500	0.87	174.86	PM ₁₀ /PM _{2.5}	0.7	200	0.612	0.061

^aBtu content per EPA AP-42.
^bEmission factors based upon EPA AP-42 emission factors for propane-fired boilers (Section 1.5, 07/2008). Sulfur content of propane assumed to be 0.54 gr/100 lb.
^cNO_x and CO emission rates based on data provided by Fives North American - see Attachment D.
^dMaximum annual hours of operation for propane burners of 2000/yr based on conservative estimates of number of cold starts, hot starts, and upsets per year plus a safety factor.